

# Mississippi Canyon 252 Incident

## Addendum 1 Shallow Coral Tier 1 Plan

Approval of this work plan is for the purposes of obtaining data for the Natural Resource Damage Assessment. Each party reserves its' right to produce its own independent interpretation and analysis of any data collected pursuant to this work plan.

### APPROVED:

  
Department of Commerce Trustee Representative:

5/17/2011  
Date

  
BP Representative:

5/17/2011  
Date

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## Addendum 1

### Shallow Coral Work Plan and SOPs

#### Tier 1

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This addendum expands the Shallow Coral Work Plan objectives to document baseline conditions for shallow water corals. Use of any method in any Tier 1 plan does not constitute a guarantee or imply that the method will be replicated under a Tier 2 work plan.

All diving activities involved in this plan will fit the criteria for scientific dives (i.e. "...solely as a necessary part of a scientific...activity by employees whose sole purpose for diving is to perform scientific research tasks..." 29 CFR 1910.402). All teams involved in diving under this shallow-water Coral Tier 1 Plan will operate in accordance with institutional diving protocols and under each institution's diving emergency plans (NOAA, NPS, or AAUS {[www.aaus.org](http://www.aaus.org)}). For example, under NOAA operations, each team and operation has qualified and authorized divers involved, has an approved dive plan, has a Dive Accident Management Plan for the specific area of operations, conducts explicit daily dive briefing, and includes on site availability of emergency O2 (NOAA policies and regulations described in detail at [http://www.ndc.noaa.gov/pdfs/Dive\\_regulations\\_and\\_policies.pdf](http://www.ndc.noaa.gov/pdfs/Dive_regulations_and_policies.pdf)). AAUS and National Park Service teams will follow analogous protocols to ensure dive safety as prescribed by their home agency/institutions.

#### ***Laboratory Analysis***

Unless otherwise specified or agreed upon by the Trustees and BP, all SPMD samples, once extracted by the manufacturer(EST), will be sent to Alpha Analytical for chemical analysis, with oversight by NewFields consultants. All data will be provided to BP in a timely manner.

## ***Data Sharing***

Each laboratory shall simultaneously deliver raw data, including all necessary metadata, generated as part of this work plan as a Laboratory Analytical Data Package (LADP) to the trustee Data Management Team (DMT), the Louisiana Oil Spill Coordinator's Office (LOSCO) on behalf of the State of Louisiana and to BP (or ENTRIX on behalf of BP). The electronic data deliverable (EDD) spreadsheet with pre-validated analytical results, which is a component of the complete LADP, will also be delivered to the secure FTP drop box maintained by the trustees' Data Management Team (DMT). Any preliminary data distributed to the DMT shall also be distributed to LOSCO and to BP (or ENTRIX on behalf of BP). Thereafter, the DMT will validate and perform quality assurance/quality control (QA/QC) procedures on the LADP consistent with the authorized Analytical Quality Assurance Plan, after which time the validated/QA/QC'd data shall be made available simultaneously to all trustees and BP (or ENTRIX on behalf of BP). Any questions raised on the validated/QA/QC results shall be handled per the procedures in the Analytical Quality Assurance Plan and the issue and results shall be distributed to all parties. In the interest of maintaining one consistent data set for use by all parties, only the validated/QA/QC'd data set released by the DMT shall be considered the consensus data set. In order to assure reliability of the consensus data and full review by the parties, no party shall publish consensus data until 7 days after such data has been made available to the parties. Also, the LADP shall not be released by the DMT, LOSCO, BP or ENTRIX prior to validation/QA/QC absent a showing of critical operational need. Should any party show a critical operational need for data prior to validation/QA/QC, any released data will be clearly marked "preliminary/unvalidated" and will be made available equally to all trustees and to BP (or ENTRIX on behalf of BP).

## **Objective 1: Semi-permeable membrane devices (SPMD) Extraction and Analysis Plan for the SPMDs deployed in the Florida Keys and Flower Garden Banks NMS**

The purpose of this portion of the Tier 1 Addendum Plan document is to provide guidance on the number of lipid membrane samples to be extracted and analyzed in accordance with ongoing oil monitoring efforts outlined in the Mississippi Canyon 252 Shallow Water Coral Plan. The plan outlines the number of samples required to perform a preliminary assessment of potential hydrocarbon contamination in the Florida Keys (FK) and Flower Garden Banks National Marine Sanctuary (FGBNMS). Extraction of SPMDs will be performed by Environmental Sampling Technologies (EST) with extracts then sent to Alpha Analytical Laboratories for

analysis. Membranes not extracted for the preliminary assessment will be cleaned by EST and sent to TDI Brooks for long-term storage at -20°C.

The original Tier 1 SWC NRDA plan called for two deployments of SPMD's at selected monitoring sites within the Florida Keys and Flower Garden Banks. For the first deployment at each monitoring site, a single, large stainless steel canister containing five, standard length 91.4cm membranes and three small aluminum canisters each containing two, 15.5cm membranes were attached to fixed structures (e.g. stainless steel stakes, moorings, etc.) at four locations or depths within each site. In the FK, a total of 29 Coral Reef Evaluation and Monitoring Project (CREMP) sites had large and small canisters deployed while four additional sites only had the small canisters deployed. For the second FK deployment, three small aluminum canisters containing two, 15.5cm membranes were installed at each site (large canisters were not utilized). In the FGBNMS, each location received one large and three small SPMD canisters for both deployments. Retrieval, to date, has been successful at all four FGBNMS sites, with the exception of one complete set at Sonnier Bank. Subsequent deployments, beyond the two authorized in the Tier 1 SWC plan, are addressed in Objective 2 of this addendum.

According to NRDA sampling guidelines, the membrane samples are composited on the day of collection. The five large 91.4cm membranes removed from the stainless steel canister were placed into two gallon size cans underwater. Three large membranes were placed into a single can; two large membranes were placed into another can. The three small aluminum canisters (each containing two 15.5cm membranes) were all placed into a single quart size can (membranes were not removed before placement into can). For the FK samples, these cans were labeled using the following NRDA coding system (NRDA Region – NRDA Sample Date – Sample Type+Sample Team+Sample Number). The last letter of the NRDA sample number for the FK samples correspond with the number and/or type of membranes collected. If the NRDA sample number ended in an A, it represented the gallon size can containing three large 91.4cm membranes. B represented the gallon size can containing two large 91.4cm membranes, and C denoted the three aluminum canisters placed inside the quart size can. The labeling system was similar for the FGBNMS (NRDA Region+FGBNMS site – NRDA Sample Date – Sample Type+Sample Number – Sample Team Number). Samples A & B represented the five large 91.4cm membranes. However, sample number 2, rather than sample C, denoted the quart size can with the three aluminum canisters placed inside.

Preliminary analysis of samples collected under the original Tier 1 Shallow Water Coral plan (two deployments) will be conducted within two weeks of the signing of this agreement. The preliminary analysis of additional samples collected subject to this addendum (three deployments) will be conducted within a week of receipt by Alpha Analytical Laboratories. The preliminary analysis will be used to confirm the presence or absence of hydrocarbons. If hydrocarbon presence is substantiated a follow up plan for subsequent analyses will be created to evaluate the remaining SPMDs that were placed into storage. The preliminary assessment involves the extraction of two large 91.4cm membranes and two small 15.5cm membranes.

Dialysis and cleanup of the SPMDs will be performed by EST. Surrogates for evaluating extraction efficiency will be provided by Alpha Analytical.

The dialysis/cleanup process as described by EST is as follows: The SPMDs will be gently cleaned in water using a soft bristled tooth brush, dipped in 1N HCl, and then rinsed with acetone and isopropyl alcohol. The required amount of spike solution will then be added and the hole will be heat sealed closed. Next, the SPMDs will be dialyzed individually in half-pint mason jars using about 225mL hexane (50mL for the smaller 15.5cm SPMDs) per jar for 18-24 hours in an incubator at 17.5C. The contents of each jar is then decanted into another jar and another 225mL (or 50mL) hexane is added; each resulting set of two jars go back in the incubator for another 18-24 hours. The sample is then concentrated using Kuderna-Danish and the dialysates of the two SPMDs are pooled (4 jars total). The sample is blown down under UHP nitrogen gas to about 0.5mL and filtered through glass fiber filter paper using GPC mobile phase (Methylene Chloride + 2% Methanol) as the transfer solvent. The sample is blown down again and split out into two auto sampler vials for GPC cleanup. Following GPC clean up, the samples will be blown down again and re-composited. Because the samples are undergoing analysis for PAHs, EST will keep the samples in Methylene Chloride. EST will run a "dialysis blank" procedure of two 92cm SPMDs and two 15.5cm SPMDs with the surrogate provided by Alpha added and conduct a "solvent blank" (no SPMDs--just hexane), again with the surrogate added. For information on background correction and data handling, please follow this link: <http://pubs.usgs.gov/tm/tm1d4/>.

The extracts from the SPMDs, including batch quality control samples such as method blanks, will be delivered to Alpha Analytical for hydrocarbon analysis. Alpha will analyze the extracts for Saturate Hydrocarbons/Total Extractable Hydrocarbons (SHC/TEH) by Gas Chromatography with Flame Ionization Detection (GC/FID) based on EPA Method 8015. Using this GC/FID analysis, Alpha will report the analytes listed in Table 1.1b of the Analytical Quality Assurance Plan, Mississippi Canyon 252 (Deepwater Horizon), Natural Resource Damage Assessment, Version 2.1, July 2010 (AQAP).

The extracts will also be analyzed for Polycyclic Aromatic Hydrocarbons (PAHs) including parent PAHs and alkyl homologues using Gas Chromatography/Mass Spectrometry operated in the Selected Ion Monitoring mode (GC/MS-SIM). This analytical procedure is based on EPA Method 8270D. The analytes reported from this analysis are listed in Table 1.1a. of the AQAP. In addition, the GC/MS-SIM analysis will acquire data for the characteristic ions of petroleum biomarkers, as shown in Table 1.1f of the AQAP. The petroleum biomarker analysis is qualitative and may be used with the SHC/TEH and PAH data to determine the characteristics of a particular sample. All results of the analyses will be provided to members of the Shallow Water Corals Technical Working Group, including BP.

All large and small membranes will be extracted and analyzed separately to examine variation in the detection of hydrocarbon presence across different membranes. The analysis of two large and two small membranes from each site also allows for an assessment of intra-site variation because they were deployed at different locations and aids in determining any

differences in the detection limits of the two device designs (large stainless steel vs. small aluminum canisters).

The tables below list the site and deployment information for the SPMDs deployed in the FK and FGBNMS under the original Tier 1 SWC plan (two deployments). Table 1 lists 27 CREMP sites and sample ID numbers for which both large and small SPMDs were successfully recovered. Sites in which only small aluminum canisters were deployed or sites where large canisters were not retrieved will be excluded from the preliminary analysis. Table 2 lists the CREMP sites and sample ID numbers that were included in the second deployment. Tables 3 and 4 list the site and deployment information for the FGBNMS which are included under the original Tier 1 SWC plan for the first and second deployments, respectively. Appendix A provides an estimated budget for the analysis to be carried out by EST and Alpha Analytical.

The sample ID / Chain of Custody numbers for samples collected under the first two deployments, as called for in the original Tier 1 SWC plan, are listed in Tables 1-4 of this addendum for reference purposes. Sample ID numbers for collections under additional deployments called for in this addendum will be provided to EST and Alpha Analytical as these retrievals occur.

**Table 1**

List of 27 CREMP sites and corresponding Chain of Custody/NRDA SPMD Sample ID #'s for the preliminary analysis of two large standard length and small SPMDs. Regions of the Keys are identified as Lower (LK), Middle (MK), or Upper (UK). NRDA sample numbers ending in A represent the gallon size can containing three large 91.4cm membranes. Those ending in B denote the gallon size can containing two large 91.4cm membranes. Those ending in C represent the three aluminum canisters placed inside the quart size can.

Site Name	Region	First SPMD Deploy Date	FirstSPMD Retrieval Date	Chain of Custody/NRDA SPMD Sample ID #'s
Red Dunn Reef	LK	8/3/2010	9/14/2010	FLBR75-A0914-OD201A,01B,01C
West Washer Women	LK	8/11/2010	9/14/2010	FLBR75-A0914-OD202A,02B,02C
Western Head	LK	8/9/2010	9/10/2010	FLBS74-A0910-OD201A,01B,01C
Cliff Green	LK	8/12/2010	9/9/2010	FLBS74-A0909-OD201A,01B,01C
Smith Shoal	LK	8/7/2010	9/10/2010	FLBQ74-A0910-OD202A,02B,02C
Eastern Sambo Shallow	LK	8/4/2010	9/13/2010	FLBS75-A0913-OD202A,02B,02C
Western Sambo Shallow	LK	8/6/2010	9/11/2010	FLBS75-A0911-OD202A,02B,02C
Rock Key Shallow	LK	8/5/2010	9/12/2010	FLBS74-A0912-OD202A,02B,02C
Sand Key Shallow	LK	8/12/2010	9/12/2010	FLBS74-A0912-OD203A,03B,03C
Eastern Sambo Deep	LK	8/4/2010	9/13/2010	FLBS75-A0913-OD201A,01B,01C
Western Sambo Deep	LK	8/6/2010	9/11/2010	FLBS75-A0911-OD201A,01B,01C
Rock Key Deep	LK	8/5/2010	9/12/2010	FLBS74-A0912-OD201A,01B,01C
Thor Patch	MK	8/3/2010	9/7/2010	FLBR77-A0907-OD203A,03B,03C
Dustan Rocks	MK	8/3/2010	9/7/2010	FLBR77-A0907-OD204A,04B,04C
Tennessee Shallow	MK	7/15/2010	8/17/2010	FLBR79-A0817-OD202A,02B,02C
Sombrero Shallow	MK	8/3/2010	9/7/2010	FLBR77-A0907-OD202A,02B,02C
Tennessee Deep	MK	7/15/2010	8/17/2010	FLBR79-A0817-OD201A,01B,01C
Sombrero Deep	MK	8/3/2010	9/7/2010	FLBR77-A0907-OD201A,01B,01C
Burr Fish Patch	UK	7/10/2010	8/13/2010	FLBP80-A0813-OD203A,03B,03C
Turtle	UK	7/12/2010	8/14/2010	FLBN81-A0814-OD201A,01B,01C
Admiral	UK	7/12/2010	8/14/2010	FLBP80-A0814-OD206A,06B,06C
Carysfort Shallow	UK	7/12/2010	8/14/2010	FLBN81-A0814-OD203A,03B,03C
Molasses Shallow	UK	7/13/2010	8/13/2010	FLBP80-A0813-OD202A,02B,02C
Conch Shallow	UK	7/14/2010	8/14/2010	FLBQ80-A0814-OD209A,09B,09C
Carysfort Deep	UK	7/9/2010	8/14/2010	FLBN81-A0814-OD202A,02B,02C
Molasses Deep	UK	7/13/2010	8/13/2010	FLBP80-A0813-OD201A,01B,01C
Conch Deep	UK	7/14/2010	8/14/2010	FLBQ80-A0814-OD208A,08B,08C

**Table 2**

List of 31 CREMP sites and corresponding Chain of Custody/NRDA SPMD Sample ID #'s for the analysis of small SPMDs from the second deployment in the Florida Keys. NRDA sample numbers represent the three aluminum SPMD canisters placed inside a quart size can.

Site Name	2nd SPMD Deploy Date	2nd SPMD Retrieval Date	NRDA SPMD Sample ID - 2nd Retrieval
Red Dunn Reef	9/14/10	10/26/10	FLBR75-A1026-OD205
West Washer Women	9/14/10	10/26/10	FLBR75-A1026-OD202
Western Head	9/10/10	10/25/10	FLBS74-A1025-OD207
Cliff Green	9/9/10	10/25/10	FLBS74-A1025-OD201
Smith Shoal	9/10/10	10/24/10	FLBQ74-A1024-OD201
Jaap Reef	9/14/10	10/26/10	FLBR75-A1026-OD201
Eastern Sambo Shallow	9/13/10	10/26/10	FLBS75-A1026-OD204
Western Sambo Shallow	9/11/10	10/25/10	FLBS75-A1025-OD203
Rock Key Shallow	9/12/10	10/25/10	FLBS74-A1025-OD205
Sand Key Shallow	9/12/10	10/25/10	FLBS74-A1025-OD206
Eastern Sambo Deep	9/13/10	10/26/10	FLBS75-A1026-OD203
Western Sambo Deep	9/11/10	10/25/10	FLBS75-A1025-OD202
Rock Key Deep	9/12/10	10/25/10	FLBS74-A1025-OD204
Thor Patch	9/7/10	10/27/10	FLBR77-A1027-OD203
Dustan Rocks	9/7/10	10/27/10	FLBR77-A1027-OD204
Alligator Shallow	8/14/10	9/17/10	FLBQ79-A0917-OD201
Tennessee Shallow	8/17/10	9/16/10	FLBR79-A0916-OD202
Sombrero Shallow	9/7/10	10/27/10	FLBR77-A1027-OD202
Alligator Deep	8/14/10	9/17/10	FLBQ79-A0917-OD202
Tennessee Deep	8/17/10	9/16/10	FLBR79-A0916-OD201
Sombrero Deep	9/7/10	10/27/10	FLBR77-A1027-OD201
Two Patches	8/14/10	9/16/10	FLBP80-A0916-OD202
Burr Fish	8/13/10	9/16/10	FLBP80-A0916-OD201
Turtle	8/14/10	9/14/10	FLBN81-A0914-OD201
Porter Patch	8/14/10	9/14/10	FLBO80-A0914-OD205
Carysfort Shallow	8/14/10	9/14/10	FLBN81-A0914-OD203
Grecian Rocks	8/14/10	9/14/10	FLBO80-A0914-OD204
Molasses Shallow	8/13/10	9/15/10	FLBP80-A0915-OD201
Conch Shallow	8/14/10	9/16/10	FLBQ80-A0916-OD203
Carysfort Deep	8/14/10	9/14/10	FLBN81-A0914-OD202
Molasses Deep	8/13/10	9/14/10	FLBP80-A0914-OD206

**Table 3**

List of 4 FGBNMS sites and corresponding Chain of Custody/NRDA SPMD Sample ID #'s for the analysis of two large standard length and small SPMDs collected under the first deployment. NRDA sample numbers ending in A represent the gallon size can containing three large 91.4cm membranes. Those ending in B denote the gallon size can containing two large 91.4cm membranes. Those ending in 2 represent the three aluminum canisters placed inside the quart size can.

Site Name	Region	First SPMD Deploy Date	First SPMD Retrieval Date	First Deployment COC / NRDA SPMD Sample ID #s
East Flower Garden Bank	GU	7/30/2010	8/30/2010	GU2793-EFGB-A0831-WF7 (1A,1B,2)
Sonnier Bank	GU	7/30/2010	8/23/2010	GU2892-SONN-A0823-WF7 (1A,1B,2)
Stetson Bank	GU	7/31/2010	8/25/2010	GU2894-STET-A0825-WF7 (1A,1B,2)
West Flower Garden Bank	GU	7/31/2010	8/30/2010	GU2793-WFGB-A0830-WF7 (1A,1B,2)

**Table 4**

List of 3 FGBNMS sites and corresponding Chain of Custody/NRDA SPMD Sample ID #'s for the analysis of two large standard length and small SPMDs collected under the second deployment. NRDA sample numbers ending in A represent the gallon size can containing three large 91.4cm membranes. Those ending in B denote the gallon size can containing two large 91.4cm membranes. Those ending in 2 represent the three aluminum canisters placed inside the quart size can.

Site Name	Region	Second SPMD Deploy Date	Second SPMD Retrieval Date	Second Deployment COC / NRDA SPMD Sample ID #s
East Flower Garden Bank	GU	8/31/10	10/12/10	GU2793-EFGB-A1012-WF7 (1A,1B,2)
Sonnier Bank	GU	8/24/10	N/A	N/A (Sample Lost)
Stetson Bank	GU	8/25/10	10/13/10	GU2894-STET-A1013-WF7 (1A,1B,2)
West Flower Garden Bank	GU	8/30/10	10/12/10	GU2793-WFGB-A1012-WF7 (1A,1B,2)

## **Objective 2: Continued deployment of semi-permeable membrane devices (SPMD) in the Florida Keys and Flower Garden Banks National Marine Sanctuaries with sample extraction**

This portion of the addendum outlines the tasks and costs associated with the continued effort to monitor for hydrocarbon contamination in the Florida Keys (FK) and the Flower Garden Banks National Marine Sanctuary (FGBNMS). Activities related to the deployment and retrieval of SPMDs in the Shallow Water Coral Tier 1 plan were approved for two deployments that allowed for monitoring beginning in July 2010. The two deployments authorized by the Tier 1 plan have already been completed throughout the Florida Keys and the FGBNMS.

The initial deployment of SPMDs at selected monitoring sites in the FK and FGBNMS used a single, large stainless steel canister containing five, standard length 91.4cm membranes and three small aluminum canisters each containing two, 15.5cm membranes. The large and small canisters were attached to fixed structures (e.g. stainless steel stakes, moorings, etc.) at four different locations or depths within each site. A total of 33 CREMP sites in the Florida Keys and four sites in the FGBNMS were selected for SPMD deployment. Deployment at a site lasted ~25-35 days depending upon weather, planning and other circumstances. The second deployment in the Florida Keys only used the three small aluminum canisters at each site because bio-fouling of the large stainless steel canisters restricted the immediate redeployment of the canisters after retrieval. Thirty-one sites in the Florida Keys were redeployed with the small SPMDs. Redeployment in the FGBNMS used both large and small SPMD canisters for both deployments.

This addendum for the continued deployment is required because SPMDs have a limited soak time of ~30 days. After 30 days, bio-fouling of canisters prevents passage of water through canister openings and the lipid membranes begin to deteriorate. Repeated deployment is required to effectively monitor for hydrocarbons. This addendum supports hydrocarbon monitoring through the utilization of SPMDs, and approves funding for three additional deployments, which have already occurred. The first deployments were carried out in July and August 2010, depending on the site (see Tables 1 and 2). A third deployment was carried out in mid September through late October. Assuming an approximate 30-day soak time, and factoring in contingencies to account for weather and other circumstances, it is anticipated that the fifth deployments and retrievals of SPMDs addressed by this addendum will be completed by February 2011. Prior to the final retrieval authorized under this addendum, the SWC Technical Working Group will convene to determine if additional deployments will be necessary. Any additional deployments will be addressed in a separate addendum.

For deployments authorized under this addendum, the number of sites in the FGBNMS (4) will be maintained as described in the original Tier 1 SWC plan, but the scale of the effort will be reduced in the FK to a subset of nine CREMP sites. The reduction in monitoring effort in the FK

is due to the absence of reports confirming subsurface oil traveling south in the Florida Loop current and favorable oceanographic conditions that would continue to limit transport of oil towards the FK. Large and small SPMD canisters will continue to be deployed at all FGBNMS sites. Only small SPMD canisters will be deployed at the FK CREMP sites. The sites to be sampled in the FK and FGBNMS under this addendum are listed in Tables 1 and 2 respectively. Deployment and retrieval of SPMDs will follow procedures described in the SWC Tier 1 plan. Analysis of samples collected under this addendum will follow procedures described in Objective 1 of this addendum. Budgets required to extend monitoring in the FGBNMS and FK are presented in the appendix.

**Table 1**

List of 9 CREMP sites that will continue to be monitored for hydrocarbons in the FK. Regions of the Keys are identified as Lower (LK), Middle (MK), or Upper (UK). Habitats are identified as patch reef (P), shallow forereef (OS), deep forereef (OD). Three (3) aluminum canisters will be deployed at each site for three additional sample periods. These deployments have already occurred.

Site Name	Region	Habitat	First SPMD Deploy Date	Second SPMD Deploy Date	Third SPMD Deploy Date
Cliff Green	LK	P	8/12/2010	9/9/2010	10/25/10
Western Sambo Shallow	LK	OS	8/6/2010	9/11/2010	10/25/10
Western Sambo Deep	LK	OD	8/6/2010	9/11/2010	10/25/10
Thor Patch	MK	P	8/3/2010	9/7/2010	10/27/10
Sombrero Shallow	MK	OS	8/3/2010	9/7/2010	10/27/10
Sombrero Deep	MK	OD	8/3/2010	9/7/2010	10/27/10
Burr Fish Patch	UK	P	7/10/2010	8/13/2010	9/16/10
Conch Shallow	UK	OS	7/14/2010	8/14/2010	9/16/10
Conch Deep	UK	OD	7/14/2010	8/14/2010	9/16/10

**Table 2**

List of 4 FGBNMS sites that will continue to be monitored for hydrocarbons. A single large stainless steel containing five large membranes and three aluminum canisters containing two small membranes will be deployed at each site for three additional deployments. These deployments have already occurred.

Site Name	Region	First SPMD Deploy Date	Second SPMD Deploy Date	Third SPMD Deploy Date
East Flower Garden Bank	GU	7/30/10	8/31/10	10/12/10
Sonnier Bank	GU	7/30/10	8/23/10	10/8/10
Stetson Bank	GU	7/31/10	8/25/10	10/13/10
West Flower Garden Bank	GU	7/31/10	8/30/10	10/12/10

#### **Appendix A – SPMD Extraction and Analysis Budget**

Budget to conduct analysis of two large standard length and two small SPMDs from each site. Two large standard length and two small SPMDs will be analyzed for the FGBNMS from each site per sampling/deployment period. Deployments three through five were reduced to nine sites in the Florida Keys (see Objective 2 of this Addendum). Total costs calculated as number of sites x total deployments x cost per site.

Region	Total Number of Sites	Total Deployments	Dialysis & Clean up 91.4cm	Dialysis & Clean up 15.5cm	Cost Per Site	Total Cost
Florida Keys	27	1	\$251.72	\$104.50	\$356.22	\$9617.74
Flower Garden Banks	4	5	\$251.72	\$104.50	\$356.22	\$7124.40
Florida Keys (2 <sup>nd</sup> Deployment)	31	1	N/A	\$104.50	\$104.50	\$3239.50
Florida Keys (Deployments 3-5)	9	3	N/A	\$104.50	\$104.50	\$2821.50

## Appendix B – Continued SPMD Deployment Budgets

This budget represents only those costs that are specific to the implementation of this sampling plan. This budget excludes Trustee labor and contract employee labor costs, which will be documented and accounted for at a later time as part of the Trustees' assessment costs.

### *Budget for continued SPMD Deployment & Retrieval at CREMP sites in the Florida Keys*

#### Salary

FTE-Grant	BiMonthly Salary + Fringe	PayPeriods	
Vanessa Brinkhuis	\$1,967.39	1.5	\$2,951.09
Mike Colella	\$2,282.60	1.5	\$3,423.90
Jim Kidney	\$2,156.41	1.5	\$3,234.62
<b>TOTAL SALARIES</b>			<b>\$9,609.60</b>

#### Travel

##### SPMD Deployment & Retrieval:

Travel for 3 divers to deploy and recover SPMDs throughout Florida Keys. Travel is from group's headquarters at FWRI, St. Petersburg, FL to Florida Keys. A total of 16 days spanning October thru January are budgeted to deploy and retrieve SPMDs from all 3 regions (Upper, Middle, Lower Keys) once per month (October, November, December, January). Three days are budgeted for each month and a minimum of 3 deployments and 1 retrieval will be performed providing continuous monitoring thru January 2011. Per Diem is for 1 day per person at end of trip and 4 trips are planned. (1) October deployment, (2) November retrieval and deployment (3) December retrieval and deployment (4) January retrieval	meals	\$36/day/person	\$1,296
	lodging	\$100/day/person	\$4,800
	per diem	\$80/day/person	\$960

<b>TOTAL TRAVEL EXPENSES</b>	<b>\$7,056</b>
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**Supplies**

Fuel (vehicles)	\$800
Field & Dive Supplies	\$200
Office Supplies	\$100
<b>TOTAL SUPPLIES</b>	<b>\$1,100</b>

**Transportation**

<b>Vessel Cost: SPMD Deployment &amp; Recovery</b>	<b>\$3,000</b>
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FWRI Research Vessels (23' Parker or 26" Whaler) will be provided to support deployment and retrieval of SPMDs from all locations at a cost of \$250/day for 12 days. Vessel cost includes rate for fuel. Three days are estimated for deployment and retrieval for each month and total of four trips are planned

<b>TOTAL TRANSPORTATION</b>	<b>\$3,000</b>
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<b>TOTAL COSTS</b>	<b>\$11,156</b>
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<b>TOTAL REQUEST<sup>1</sup></b>	<b>\$20,766</b>
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<sup>1</sup> The costs of SPMD deployment and retrieval will be funded through a Trustee contract because the work requires scuba.

**Budget for continued SPMD Deployment & Retrieval at Flower Garden Banks NMS and Sonnier Bank Salary**

<b>FTE-Grant</b>	<b>BiMonthly Salary + Fringe</b>	<b>PayPeriods</b>	
G.P. Schmahl	\$6,730.76	1.5	\$10,096.14
Emma Hickerson	\$4,807.69	1.5	\$7,211.54
<b>Contract</b>			
Ryan Eckert			\$3,600.64
Marissa Nuttall			\$4,830.72
John Embesi			\$7,208.96
<b>TOTAL SALARIES</b>			<b>\$32,948.00</b>

**Transportation**

**Vessel Cost: SPMD Deployment & Recovery** **\$75,000**

FGBNMS Research Vessel R/V MANTA. 83' Catamaran will be provided to support deployment and retrieval of SPMD's from all locations at a cost of \$5K/day for 15 days (3 days/cruise/5 cruises). Vessel costs include food, fuel, and crew.

**TOTAL TRANSPORTATION** **\$75,000**

**TOTAL REQUEST<sup>2</sup>** **\$107,948**

The Parties acknowledge that this budget is an estimate, and that actual costs may prove to be higher. BP's commitment to fund the costs of this work includes any additional reasonable costs within the

<sup>2</sup> The costs of SPMD deployment and retrieval will be funded through a Trustee contract because the work requires scuba.

scope of this work plan that may arise. The trustees will make a good faith effort to notify BP in advance of any such increased costs.